

JUSTIFICATION OF CHANGES TO ISMP

Description of changes discussed below.

A. ISMP 3.7, Revise “building and operating a full scale melter” to “operating a pilot melter”

B. ISMP 3.9.2, Revise “Process vessel vents are treated to scrub out radioactive particulates before passing through filter media.” to “Melter offgas streams are treated to scrub...”

A. The use of a full-scale melter to examine or prove novel processes, test the design and maintainability of the components, or to provide operator training in operations or maintenance activities has been the subject of considerable discussion throughout this stage of the project. Options considered have ranged from high fidelity full scale melters with prototypic container filling, feed systems and offgas systems to the use of existing smaller pilot melters with very little upgrading from what exists at the moment. In the deliberation of the options, compromises and balances were made between underpinning the design, providing operating information, schedule, costs, and risks mitigation.

In the case of the LAW Melter, engineering determined that the best strategy was to invest in the upgrade of an existing pilot melter. The proposed upgrade will allow full-scale containers to be filled, and large scale feed tank systems, large scale offgas system, and full-scale components of the melter to be tested. The pilot melter is approximately 3.3 m² in plan area compared to 10 m² for the production melters. However, many features are full scale. Important full-scale features are:

- the electrode spacing;
- the height/depth of the melter; and
- the thickness of the refractory containment walls.

The pilot melter is, in effect, a third section of the production melter. The melter will allow proving of novel concepts, operational envelope work, and may provide a platform for operator training.

The HLW melter is substantially based on the existing operational West Valley melter. However development test melters will also support the design of the HLW production melter. One of the larger development melters will be approximately two thirds the height of the operational HLW melter. This development test melter will allow filling of a full-scale container and will include a large-scale offgas treatment system.

The pilot melters will not be an isolated part of the development program; the program will also be supported by smaller development melter(s) and testing at vendors.

Comparison to DOE/RL-96-0006, Revision 1

ISMP REVISED TEXT	DOE/RL OBJECTIVE	COMPARISON
Such development work includes building and operating a full-scale pilot (cold operation) melter and associated feed and mechanical handling systems. This prototype is used to examine and prove novel processes, test the design and maintainability of components, and provide operator training in operational and maintenance activities	4.1.5.2 Contractor Design Knowledge The Contractor operating organizations should become and remain familiar with the features and limitations of components included in the design of the facility. They should obtain appropriate input from the design organization on pre-operational testing, operating procedures, and the planning and conduct of training.	This objective will continue to be met, even if the melter development and testing does not include a full-scale melter. The proposed pilot melter(s) will allow for appropriate input from the design organization to the operations and training organizations.
	4.1.6.2 Established Techniques and Procedures The Contractor should use well proven and established techniques and procedures supported by quality assurance practices to provide high quality equipment and achieve high quality construction.	The development program will still be subject to the proven techniques and quality assurance practices, even if the melters used are not full-scale components. The size of the pilot melters will not impact the quality of the construction of the facility.
	4.2.2.1 Proven Engineering Practices Safety technologies incorporated into the facility design should have been proven by experience or testing and should be reflected in approved codes and standards. Significant new design features should be introduced only after thorough research and model or prototype testing at the component, system, or facility level, as appropriate	The technologies incorporated into the design can be adequately tested and proven by the use of melters that are not full-scale melters. Thorough research and testing can be completed on the pilot melters discussed.

B. Scrubbing process vessel ventilation streams to remove radioactive particulate material to reduce loading on the ventilation filtration media will not be required for all ventilation systems at the RPP-WTP. In some cases, other techniques may be used to reduce the overall radioactive level of ventilation streams prior to filtration. However, the components to scrub ventilation systems are only planned for installation in the melter offgas systems. The technique, as described in the ISMP, was proposed to maintain exposures ALARA by reducing the overall radioactive deposits on the filtering media. The expected levels of radioactive particulate material will not challenge the ALARA guidelines or justify the added expense of the installation of scrubbers in the vessel ventilation systems. The project maintains the commitment to ALARA practices and the design and operating features to support that commitment; therefore, this change to the ISMP does not have an adverse impact on the safety of the facility workers, the co-located workers, the public, or the environment.

Comparison to DOE/RL-96-0006, Revision 1

ISMP REVISED TEXT	DOE/RL OBJECTIVE	COMPARISON
<p>Radioactive systems at the TWRS-P Facility are designed to minimize the potential for leaks of radioactive material. Radioactive leaks are collected and segregated from non-radioactive waste streams. To the extent possible, radioactive leaks are returned to the process stream.</p> <p>Process vessel vents Melter offgas streams are treated to scrub out radioactive particulates before passing through filter media. The scrub streams are returned to the process stream.</p>	<p>3.2 Radiation Protection Objective Ensure that during normal operation radiation exposure within the facility and radiation exposure and environmental impact due to any release of radioactive material from the facility is kept as low as is reasonably achievable (ALARA) and within prescribed limits, and ensure mitigation of the extent of radiation exposure and environmental impact due to accidents.</p>	<p>The radiation protection objective is met even if process vessel vents are not scrubbed prior to filtration. Scrubbers will be installed in the melter offgas systems to reduce radioactive particulate build up on the HEPA filters.</p>
	<p>4.2.3.2 Radiation Protection Features At the design stage, radiation protection features should be incorporated to protect workers from radiation exposure and to keep emissions of radioactive effluents ALARA and within prescribed limits.</p>	<p>Protection features are still included in the design that will keep exposures and emissions ALARA even without scrubbing the process vessel vents.</p>